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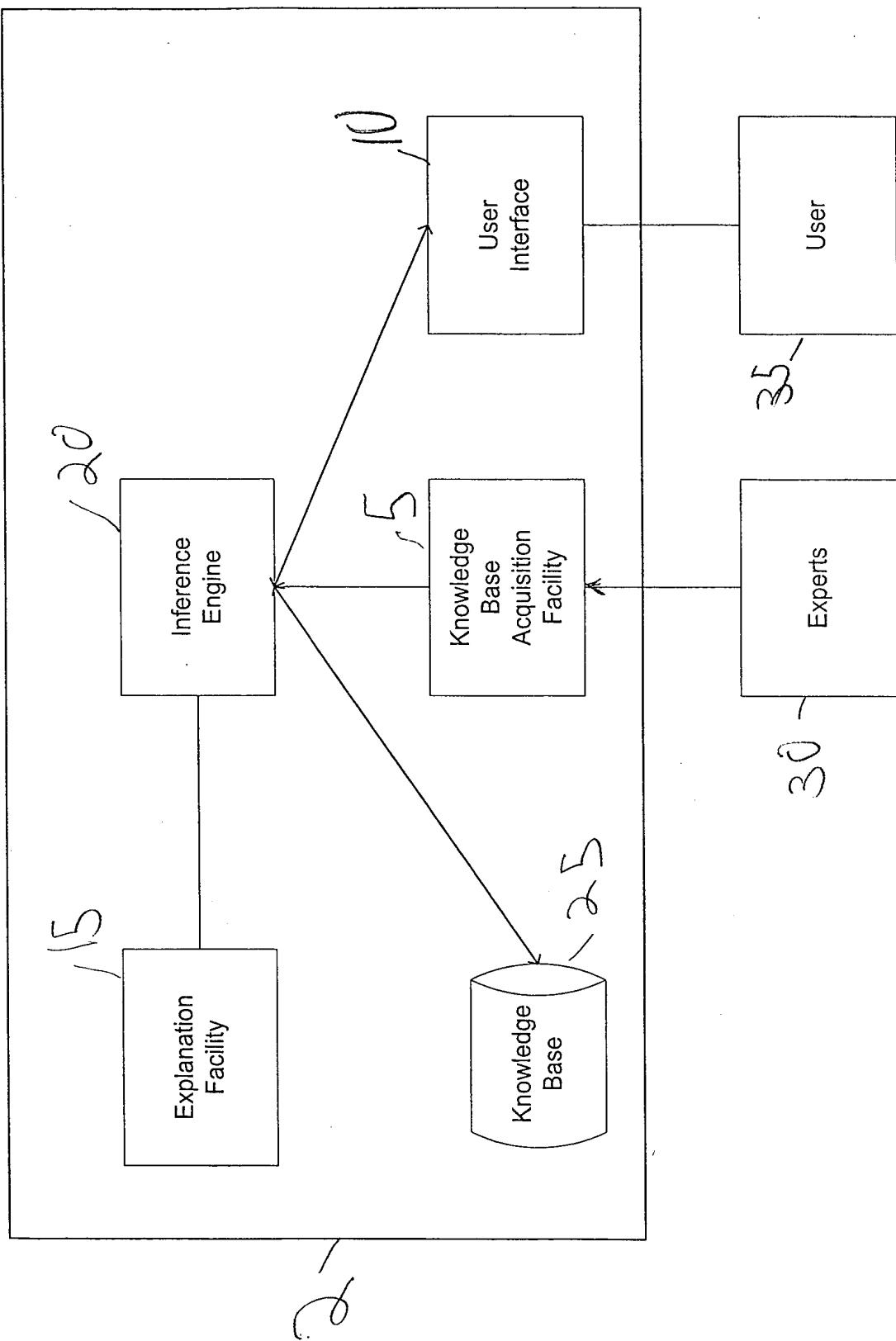


FIGURE 1

Conceptual System Diagram

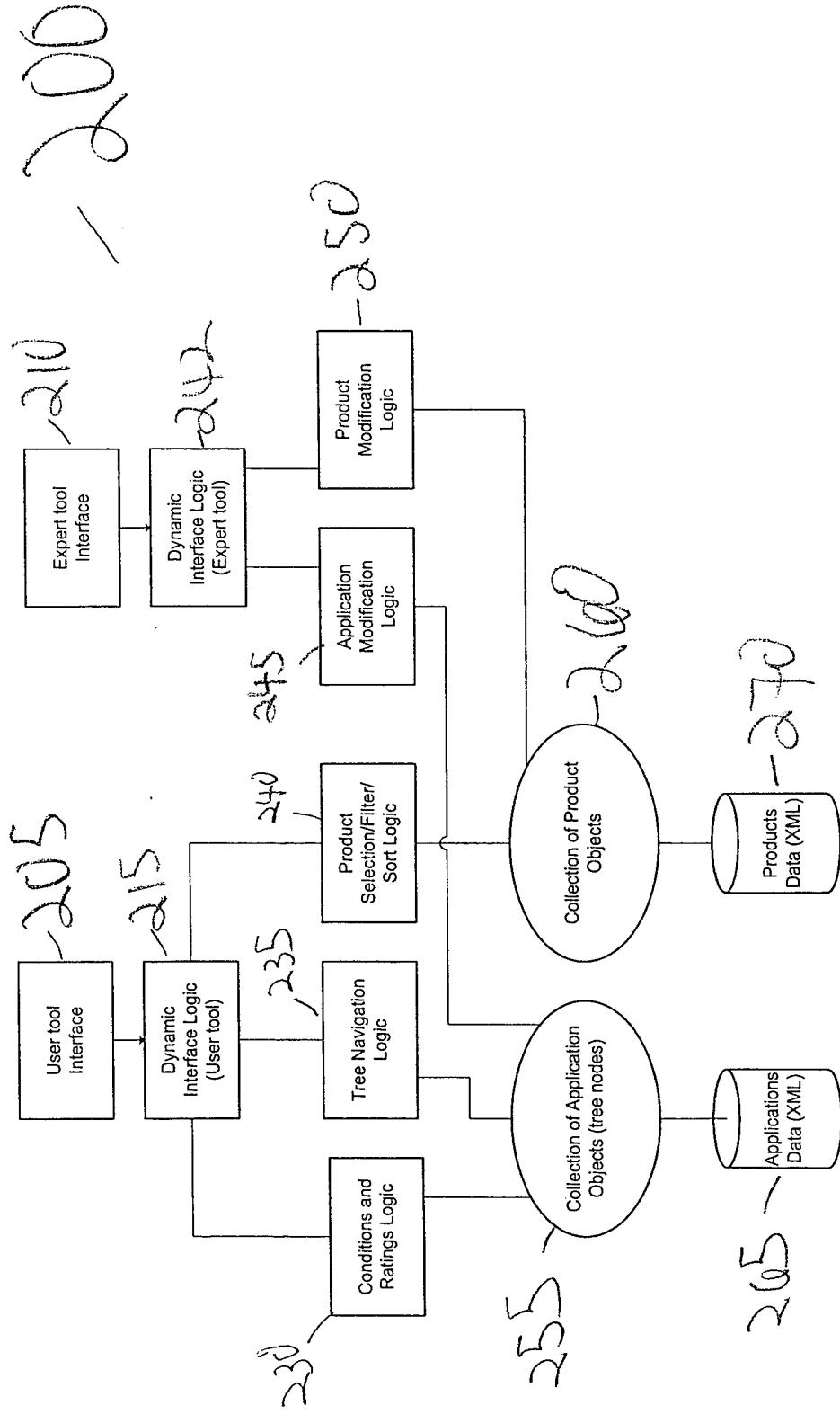


Figure 2

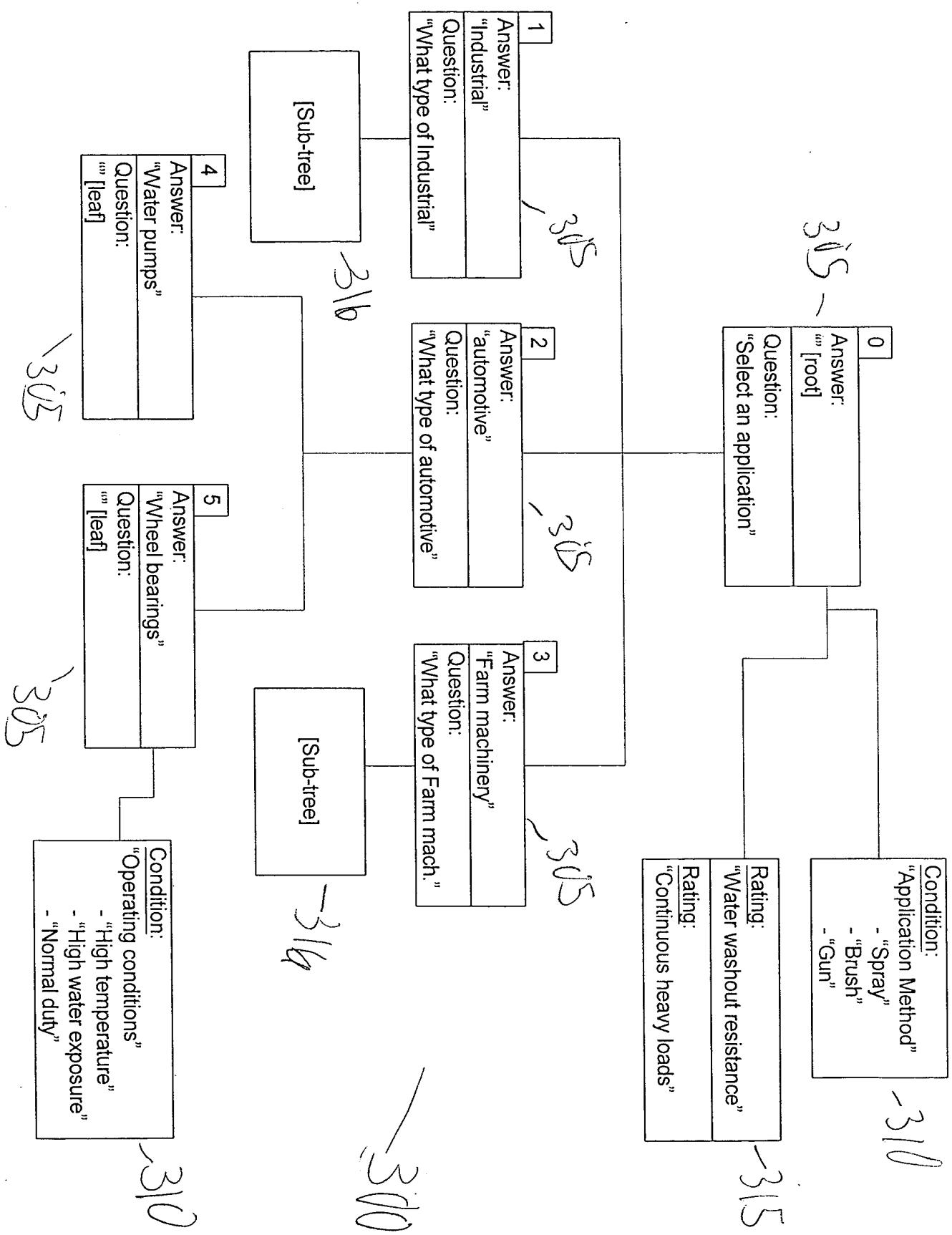


FIGURE 3

400

```
<?xml version="1.0" encoding="utf-8" ?>
- <applications>
- <application id="0">
  <answer />
  <question>Select an Application</question>
  <parent />
- <condition cid="1">
  <prompt>Application Method</prompt>
  <choice>Spray</choice>
  <choice>Brush</choice>
  <choice>Gun</choice>
</condition>
- <preference pid="3">
  <prompt>Water washout resistance</prompt>
</preference>
- <preference pid="4">
  <prompt>Continuous heavy loads</prompt>
</preference>
</application>
- <application id="1">
  <answer>Industrial</answer>
  <question>Which type of industrial?</question>
  <parent>0</parent>
</application>
- <application id="2">
  <answer>Automotive</answer>
  <question>What type of automotive?</question>
  <parent>0</parent>
</application>
+ <application id="4">
- <application id="5">
  <answer>Wheel bearings</answer>
  <question />
  <parent>2</parent>
- <condition cid="11">
  <prompt>Operating Conditions</prompt>
  <choice>High temperature</choice>
  <choice>High water exposure</choice>
  <choice>Normal Duty</choice>
</condition>
</application>
- <application id="3">
  <answer>Farm Machinery</answer>
  <question>What type of farm machinery?</question>
  <parent>0</parent>
</application>
</applications>
```

Fig. 4

```
<?xml version="1.0" encoding="utf-8" ?>
- <greases>
- <grease>
  <name>Grease Product A</name>
  - <applications>
    <application>4</application>
    <application>5</application>
  </applications>
  - <preferences>
    <preference pid="0">4</preference>
    <preference pid="1">9</preference>
  </preferences>
  - <conditions>
    - <condition cid="0">
      - <Choices>
        <choice>Brush</choice>
        <choice>Gun</choice>
      </Choices>
    </condition>
    - <condition cid="1">
      - <Choices>
        <choice>High Temperature</choice>
      </Choices>
    </condition>
  </conditions>
</grease>
- <grease>
  <name>Grease Product B</name>
  - <applications>
    <application>5</application>
  </applications>
  - <preferences>
    <preference pid="0">2</preference>
    <preference pid="1">7</preference>
  </preferences>
  - <conditions>
    - <condition cid="0">
      - <Choices>
        <choice>Spray</choice>
      </Choices>
    </condition>
    - <condition cid="1">
      - <Choices>
        <choice>Normal Duty</choice>
      </Choices>
    </condition>
  </conditions>
</grease>
</greases>
```

500

Fig. 5.

Expert Tool Flow Chart

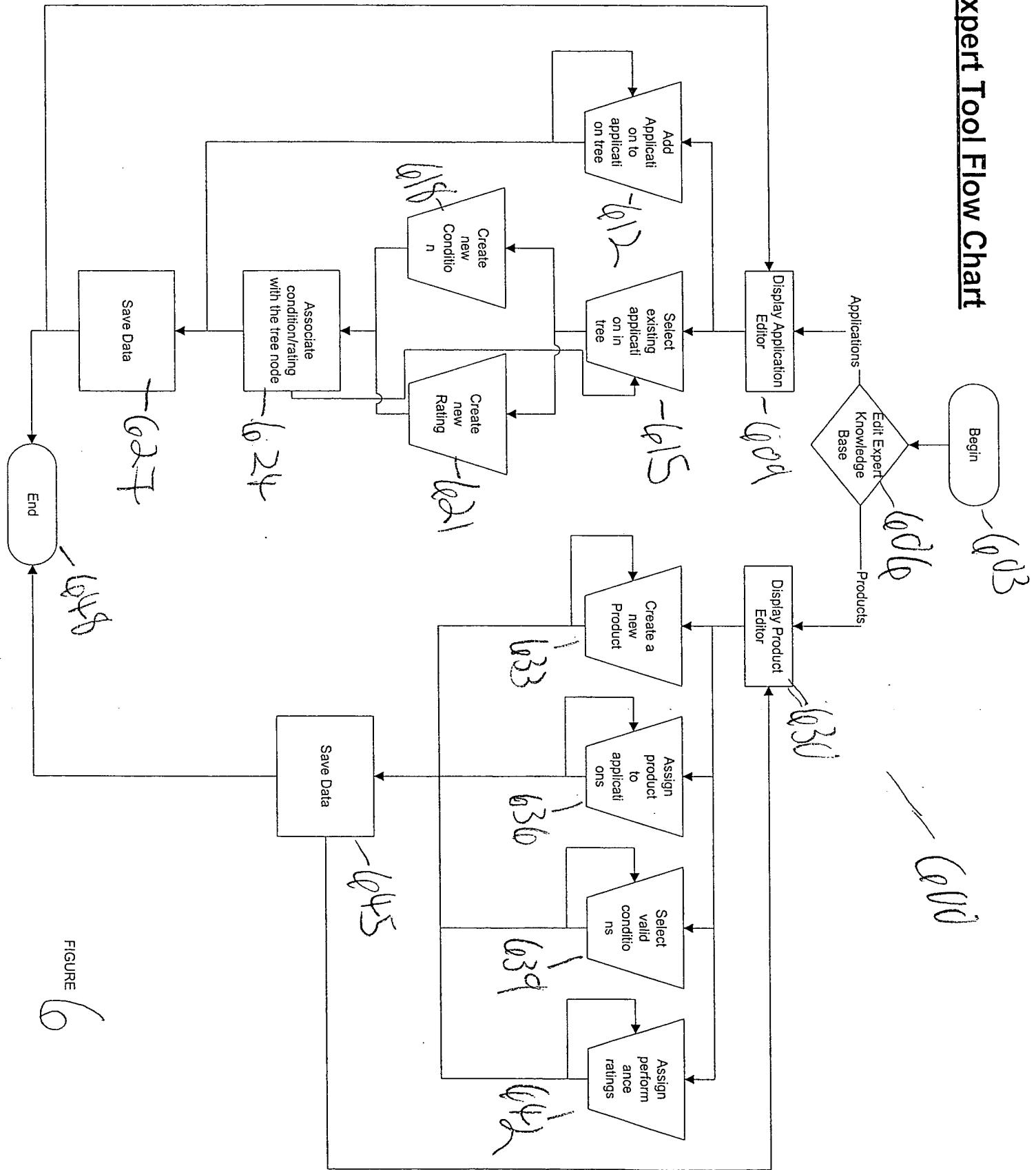
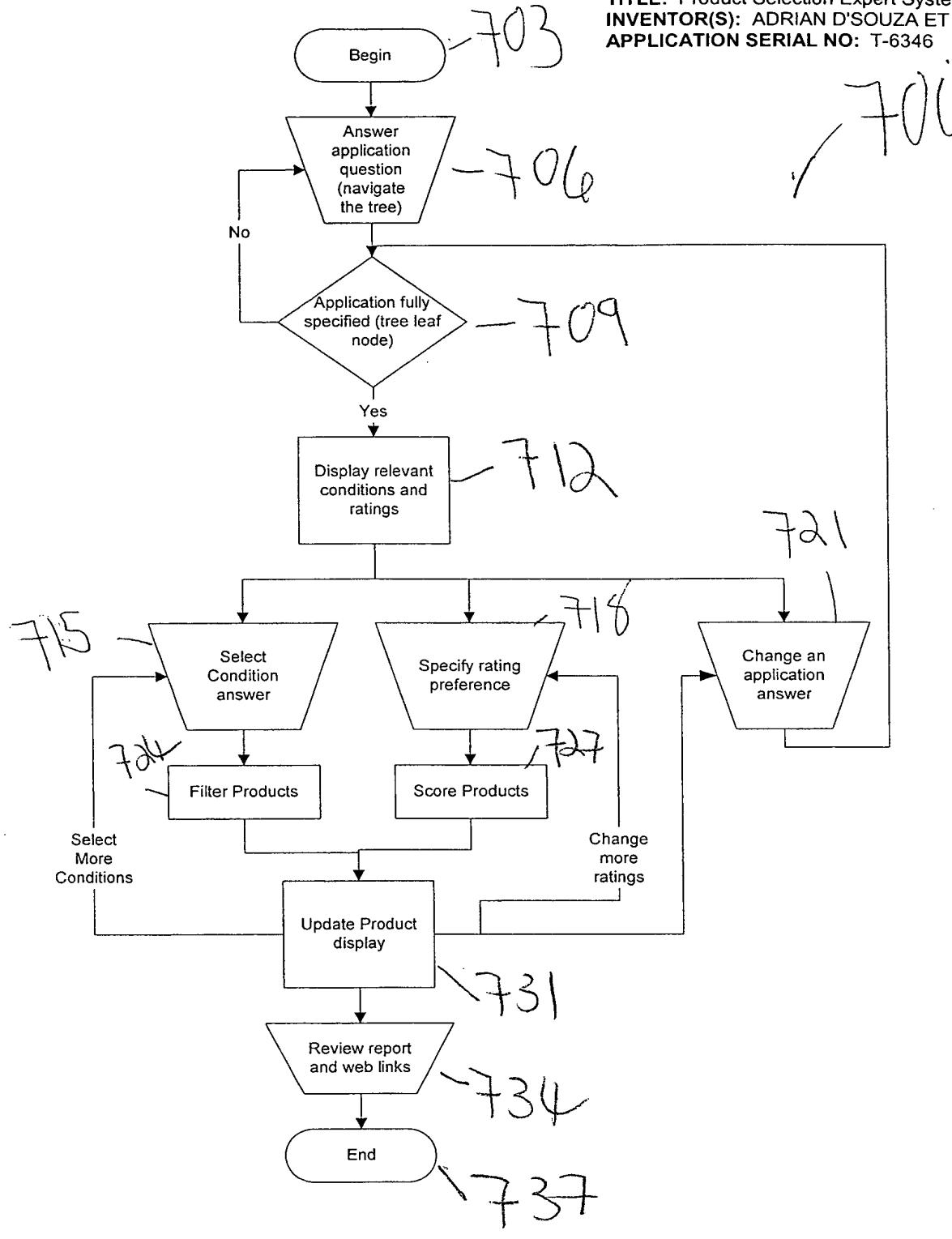


FIGURE 6

User Tool Flow Chart

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FIGURE

7

Expert System

Screen 1 A new product is added and its appropriate application is checked off in a simple check off box

Match Product to Application		Set Application Details	
Product	Application	Conditions	Reasons
<input type="checkbox"/> Dur-O-Lub Grease EP NLGI 3	<input type="checkbox"/> Applications	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> FM Grease EP Animal	<input type="checkbox"/> Set Application Details	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> FM Greases	<input type="checkbox"/> Add Grease	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> FM Greases	<input type="checkbox"/> Enter text for New Grease	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> FM Greases	<input type="checkbox"/> New Product	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Mill Lubricant	<input type="checkbox"/> OK	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Molyl Grease	<input type="checkbox"/> Cancel	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Molyl Grease	<input type="checkbox"/> Bearing	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Molyl MAX Grease	<input type="checkbox"/> Gear	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Molyl MAX Grease EP NLGI 2	<input type="checkbox"/> Food	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Open Gear Grease	<input type="checkbox"/> Bearings	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Open Gear Grease - Aerosol	<input type="checkbox"/> Ball, roller, or needle	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Open Gear Grease - LC	<input type="checkbox"/> Spherical roller bearing	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Open Gear Lubricant 250 NC-HT	<input type="checkbox"/> Conveyor belt or roll bearing	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Open Gear Lubricants, 100 NC	<input type="checkbox"/> Needle bearing	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Open Gear Lubricants, 250 NC	<input type="checkbox"/> Roller bearing	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Open Gear Lubricants, 800 NC	<input type="checkbox"/> Ball bearing	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> RPM Arctic Grease	<input type="checkbox"/> Plan (journal) bearing	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> RPM Automotive LC Grease EP NLGI	<input type="checkbox"/> Conventional grease	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> RPM Automotive LC Grease EP NLGI	<input type="checkbox"/> Slides, guides, or ways	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> RPM Heavy Duty LC Grease EP NLGI	<input type="checkbox"/> Gears	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> RPM Heavy Duty LC Grease EP NLGI	<input type="checkbox"/> Open	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Rykon Premium Grease No. 1364	<input type="checkbox"/> Enclosed	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Rykon Premium Grease No. 1425	<input type="checkbox"/> Casing and Tubing pipe, thread	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Rykotac Grease EP	<input type="checkbox"/> Flexible Couplings	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Sil-X Grease NLGI 1	<input type="checkbox"/> Gear type	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Sil-X Grease SF	<input type="checkbox"/> Chain type	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> SRI Grease NLGI 2	<input type="checkbox"/> Steel Grid	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> SRI Grease OEM	<input type="checkbox"/> Screws	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Super Permalube Grease	<input type="checkbox"/> Cams and cam followers	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Thread Sealing Compound	<input type="checkbox"/> Drill collars, Drill Stems	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Tool Joint Compound	<input type="checkbox"/> Heavy-duty on-highway trucking	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ulti-Plex Grease EP NLGI 0	<input type="checkbox"/> Truck wheel bearings	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ulti-Plex Grease EP NLGI 1	<input type="checkbox"/> Water pump	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ulti-Plex Grease EP NLGI 2	<input type="checkbox"/> Truck chassis (including ball and U-joints)	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ulti-Plex HV Synthetic Grease EP	<input type="checkbox"/> Kingpin or shackles	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ulti-Plex Synthetic Grease EP	<input type="checkbox"/> Fifth wheel	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ultra-Duty Grease EP NLGI 0	<input type="checkbox"/> Passenger Car/Light Truck	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ultra-Duty Grease EP NLGI 1	<input type="checkbox"/> Alternator/Generator rebuilders	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ultra-Duty Grease EP NLGI 2	<input type="checkbox"/> Wheel bearings	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ultra-Duty Grease EP NLGI 3	<input type="checkbox"/> Water pumps - rebuilders	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons
<input type="checkbox"/> Ultra-Duty Grease EP NLGI 4	<input type="checkbox"/> Chassis (including ball & U-joints)	<input type="checkbox"/> Conditions	<input type="checkbox"/> Reasons

Figure 6

Step 2 - User definable conditions which is acceptable for this product or service is defined by highlighting appropriate single conditions or combinations of conditions

FILE	ADD Product	Help	Match Product to Application	Set Application Detail	View Conditions	Conditions	Rating
<input checked="" type="checkbox"/>	Dura-Lith Grease EP NLGI 3					Heavy loads, braking (e.g. disc brakes, heavy loads) Wet, off-road (e.g. boat trailers, other wet conditions) Normal duty	
<input checked="" type="checkbox"/>	FM Grease EP Aerosol						
<input checked="" type="checkbox"/>	FM Greases EP NLGI 0						
<input checked="" type="checkbox"/>	FM Greases EP NLGI 1						
<input checked="" type="checkbox"/>	FM Greases EP NLGI 2						
<input checked="" type="checkbox"/>	Mill Lubricant Light						
<input checked="" type="checkbox"/>	Moly Grease EP NLGI 1						
<input checked="" type="checkbox"/>	Moly Grease EP NLGI 2						
<input checked="" type="checkbox"/>	Moly MAX Grease EP NLGI 1						
<input checked="" type="checkbox"/>	Moly MAX Grease EP NLGI 2						
<input checked="" type="checkbox"/>	Open Gear Grease						
<input checked="" type="checkbox"/>	Open Gear Grease - Aerosol						
<input checked="" type="checkbox"/>	Open Gear Grease INC						
<input checked="" type="checkbox"/>	Open Gear Lubricant 250 NC-HHT						
<input checked="" type="checkbox"/>	Open Gear Lubricants, 100 NC						
<input checked="" type="checkbox"/>	Open Gear Lubricants, 250 NC						
<input checked="" type="checkbox"/>	Open Gear Lubricants, 800 NC						
<input checked="" type="checkbox"/>	RPM Arctic Grease						
<input checked="" type="checkbox"/>	RPM Automotive LC Grease EP NLGI						
<input checked="" type="checkbox"/>	RPM Automotive LC Grease EP NLGI						
<input checked="" type="checkbox"/>	RPM Heavy Duty LC Grease EP NLGI						
<input checked="" type="checkbox"/>	RPM Heavy Duty LC Grease EP NLGI						
<input checked="" type="checkbox"/>	Rykon Premium Grease EP						
<input checked="" type="checkbox"/>	Rykon Premium Grease No. 1364						
<input checked="" type="checkbox"/>	Rykon Premium Grease No. 1426						
<input checked="" type="checkbox"/>	Rykotac Grease EP						
<input checked="" type="checkbox"/>	SIX Grease NLGI 1						
<input checked="" type="checkbox"/>	SIX Grease SF						
<input checked="" type="checkbox"/>	SRI Grease NLGI 2						
<input checked="" type="checkbox"/>	SRI Grease OEM						
<input checked="" type="checkbox"/>	Super Permalube Grease						
<input checked="" type="checkbox"/>	Thread Sealing Compound						
<input checked="" type="checkbox"/>	Tool Joint Compound						
<input checked="" type="checkbox"/>	Ulti-Plex Grease EP NLGI 0						
<input checked="" type="checkbox"/>	Ulti-Plex Grease EP NLGI 1						
<input checked="" type="checkbox"/>	Ulti-Plex Grease EP NLGI 2						
<input checked="" type="checkbox"/>	Ulti-Plex HV Synthetic Grease EP						
<input checked="" type="checkbox"/>	Ulti-Plex Synthetic Grease EP						
<input checked="" type="checkbox"/>	Ultra-Duty Grease EP NLGI 0						
<input checked="" type="checkbox"/>	Ultra-Duty Grease EP NLGI 1						
<input checked="" type="checkbox"/>	Ultra-Duty Grease EP NLGI 2						

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Figure 9

Step 3 – Expert assessments of ratings for each of the products or service in terms of importance to the end user are assigned by experts

	File	Add Product	Help	View Product List	View Application	Set Application Details
<input type="checkbox"/>	Dura-Lith Grease EP NLGI 3					
<input type="checkbox"/>	FM Grease EP Aerosol	0	Good Chassis Grease?			
<input type="checkbox"/>	FM Greases EP NLGI 0	5	Industrial Water Lubricant?			
<input type="checkbox"/>	FM Greases EP NLGI 1	0	Salvaging a Vehicle?			
<input type="checkbox"/>	FM Greases EP NLGI 2	0	Shock Absorber Grease?			
<input type="checkbox"/>	Mill Lubricant Light	6	Waterway Journeys Stake?			
<input type="checkbox"/>	Moly Grease EP NLGI 1	6	Continuous Heavy Loads?			
<input type="checkbox"/>	Moly Grease EP NLGI 2	6	Shockbed Protection?			
<input type="checkbox"/>	Moly MAX Grease EP NLGI 1	0	Long Use OEM Motors?			
<input type="checkbox"/>	Open Gear Grease EP NLGI 2	0				
<input type="checkbox"/>	Open Gear Grease - Aerosol	0				
<input checked="" type="checkbox"/>	Open Gear Greasing	0				
<input type="checkbox"/>	Open Gear Lubricant 250 NC-H1	0				
<input type="checkbox"/>	Open Gear Lubricants, 100 NC	0				
<input type="checkbox"/>	Open Gear Lubricants, 250 NC	0				
<input type="checkbox"/>	Open Gear Lubricants, 800 NC	0				
<input type="checkbox"/>	RPM Arctic Grease	0				
<input type="checkbox"/>	RPM Automotive LC Grease EP NLGI	0				
<input type="checkbox"/>	RPM Heavy Duty LC Grease EP NLGI	0				
<input type="checkbox"/>	RPM Heavy Duty LC Grease EP NLGI	0				
<input type="checkbox"/>	Rykon Premium Grease EP	0				
<input type="checkbox"/>	Rykon Premium Grease No. 1364	0				
<input type="checkbox"/>	Rykon Premium Grease No. 1426	0				
<input type="checkbox"/>	Rykorac Grease EP	0				
<input type="checkbox"/>	SIX Grease NLGI 1	0				
<input type="checkbox"/>	SIX Grease SF	0				
<input type="checkbox"/>	SRI Grease NLGI 2	0				
<input type="checkbox"/>	SRI Grease OEM	0				
<input type="checkbox"/>	Super Permalube Grease	0				
<input type="checkbox"/>	Thread Sealing Compound	0				
<input type="checkbox"/>	Tool Joint Compound	0				
<input type="checkbox"/>	Ulti-Plex Grease EP NLGI 0	0				
<input type="checkbox"/>	Ulti-Plex Grease EP NLGI 1	0				
<input type="checkbox"/>	Ulti-Plex Grease EP NLGI 2	0				
<input type="checkbox"/>	Ulti-Plex HV Synthetic Grease EP	0				
<input type="checkbox"/>	Ulti-Plex Synthetic Grease EP	0				
<input type="checkbox"/>	Ultra-Duty Grease EP NLGI 0	0				
<input type="checkbox"/>	Ultra-Duty Grease EP NLGI 1	0				
<input type="checkbox"/>	Ultra-Duty Grease EP NLGI 2	0				

810

Figure 10

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840

Programming steps - Adding categories or subcategories is made under each category item, this lists followup questions for the end user

870

File	Edit	Help	Match Product to Application	Get Application Details
<input type="checkbox"/> Cotton picker spindles <input type="checkbox"/> Railroad <input type="checkbox"/> Rail or flange <input type="checkbox"/> Journal (axle) roller bearing <input type="checkbox"/> Traction motor gear <input type="checkbox"/> Industrial, Marine, or Food <input type="checkbox"/> Chains <input type="checkbox"/> Wire rope <input type="checkbox"/> Bearings <input type="checkbox"/> Bell roller, or set <input type="checkbox"/> Spherical roller <input type="checkbox"/> Conveyor bearing <input type="checkbox"/> Needle bearing <input type="checkbox"/> Roller bearing <input type="checkbox"/> Ball bearing <input type="checkbox"/> Plain (journal) bearing <input type="checkbox"/> Conventional grease <input type="checkbox"/> Slides, guides, or ways <input type="checkbox"/> Gears <input type="checkbox"/> Open <input type="checkbox"/> Enclosed <input type="checkbox"/> Casing and Tubing pipe thread <input type="checkbox"/> Flexible Couplings <input type="checkbox"/> Gear type <input type="checkbox"/> Chain type <input type="checkbox"/> Steel Grid <input type="checkbox"/> Screws <input type="checkbox"/> Cams and cam followers <input type="checkbox"/> Drill collars, Drill Stems <input type="checkbox"/> Heavy-duty on-highway trucking <input type="checkbox"/> Truck wheel bearings <input type="checkbox"/> Water pump <input type="checkbox"/> Kingpin or shackle <input type="checkbox"/> Truck chassis (including ball and U-joints) <input type="checkbox"/> Fifth wheel <input type="checkbox"/> Passenger Car/light Truck <input type="checkbox"/> Alternator/Generator/rebuilders <input type="checkbox"/> Wheel bearings <input type="checkbox"/> Water pumps - rebuilders <input type="checkbox"/> Chassis (including ball & U-joints) <input type="checkbox"/> Constant Velocity joints <input type="checkbox"/> General Purpose				
<input type="checkbox"/> Answer previous question <input type="checkbox"/> Ball, roller, or needle <input type="checkbox"/> Next question to ask <input type="checkbox"/> Which bearing type? <input type="checkbox"/> Rating questions <input type="checkbox"/> Condition questions <input type="checkbox"/> Approx. bearing diameter <input type="checkbox"/> Ball, roller, needle rpm				
<input type="checkbox"/> Add <input type="checkbox"/> Delete <input type="checkbox"/> Condition choices				

850

Fig 11

101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130

Step 1: APPLICATION Step 2: CONDITIONS Step 3: Importance — 130

move cursor on scale of 1-10

Scroller to view all conditions

Select Application

Mobile Farm Machinery Railroad Industrial, Marine, or Food Heavy-duty on highway in
Passenger Car/Light Truck General Purpose Heavy Duty Off-Road

Good Chassis/Grease?

Industrial/water/rust resistance?

Salinated/rust resistance?

Water/washout resistance?

Continuous heavy loads?

Shock load protection?

Low Noise/Off/On/motor/bags

Search the Web

Chevron/Texaco Data Sheets

SELECTED GREASES

Step 5: Highlight grease, click web links
above, use Grease name in CBEST search

Selected Greases

FIGURE 12

Step 1: APPLICATION

Selected Application: Mobile Farm Machinery Railroad Industrial, Marine, or Food Heavy-duty on-highway Passenger Car/Light Truck General Purpose Heavy Duty Off-Road

112

Step 2: CONDITIONS

Scollbar to view all conditions

Move cursor on scale of 1-10

130

Step 3: Importance

Coat Chassis Grease?

Industrial water rust resistance?

Saline water rust resistance?

Water washout resistance?

Continuous heavy loads?

Shock load protection?

Oil / Noise / OEM motor/beargs

SELECTED GREASES

Step 5: Highlight greases, click web links above, use Grease name in CBEST search

Selected Greases:

114

FIGURE

101

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4100

4110

4120

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4150

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4180

4190

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4250

4260

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4280

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4300

4310

4320

4330

4340

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4370

4380

4390

4400

4410

4420

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4470

4480

4490

4500

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4530

4540

4550

4560

4570

4580

4590

4600

4610

4620

4630

4640

4650

4660

4670

4680

4690

4700

4710

4720

4730

4740

4750

4760

4770

4780

4790

4800

4810

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Step 1: APPLICATION <input type="checkbox"/> Select application <input type="checkbox"/> Railroad <input type="checkbox"/> Industrial, Marine, or Food <input type="checkbox"/> Heavy-duty on-highway <input type="checkbox"/> Passenger Car/Flight Truck <input type="checkbox"/> General Purpose <input type="checkbox"/> Heavy Duty Off-Road <input type="checkbox"/> Chains <input type="checkbox"/> Wire, rope <input type="checkbox"/> Belts/tires <input type="checkbox"/> Slides, guides, or ways <input type="checkbox"/> Gears <input type="checkbox"/> Casing and Tubing pipe <input type="checkbox"/> Plain/Flange Couplings <input type="checkbox"/> Which kind of bearing? <input type="checkbox"/> Ball, roller, or needle <input type="checkbox"/> Plain (journal) bearing		Step 2: CONDITIONS <input type="checkbox"/> Scrolling to view all conditions move cursor on scale of 1-10 Industrial water/rust resistance? <input type="checkbox"/> Good <input type="checkbox"/> Chassis Grease? <input type="checkbox"/> Saltwater/rust resistance? <input type="checkbox"/> Water/washout resistance? <input type="checkbox"/> Continuous heavy loads? <input type="checkbox"/> Shock load protection? <input type="checkbox"/> Low Noise, OEM El motor bgs?	Step 3: Importance <input type="checkbox"/> Search the Web <input type="checkbox"/> ChevronTexaco Data Sheets SELECTED GREASES Step 5: Highlight greases, click web links above, use Grease name in CBEST search Selected Greases
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FIGURE 15

FIGURE 16

Step 1: APPLICATION		Step 2: CONDITIONS		Step 3: Importance		Step 4: Printable Report					
<input type="checkbox"/> Mobile Farm Machinery <input type="checkbox"/> Railroad <input type="checkbox"/> Industrial, Marine, or Food <input type="checkbox"/> Heavy-duty on-Highway in <input type="checkbox"/> Passenger Car/Light Truck <input type="checkbox"/> General Purpose <input type="checkbox"/> Heavy Duty Off-Road 		<input type="checkbox"/> Select Application Method <input type="checkbox"/> Spray Gun <input type="checkbox"/> Manual <input type="checkbox"/> Single Point auto-lubricator <input checked="" type="checkbox"/> Central System <input type="checkbox"/> Grease gun <input type="checkbox"/> Aerosol spray <input type="checkbox"/> Other, like container pumps		<input type="checkbox"/> Industrial water/rust resistance? <input type="checkbox"/> Good Chassis Grease? <input type="checkbox"/> Saltwater/rust resistance? <input type="checkbox"/> Water/washout resistance? <input type="checkbox"/> Continuous heavy loads? <input type="checkbox"/> Shock/odd protection? <input type="checkbox"/> Low Noise- OEM/B1 motor/brgs		<input type="checkbox"/> Enter Optional Customer Name for report <input type="checkbox"/> Search the Web <input type="checkbox"/> Chevron Texaco Data Sheets <input type="checkbox"/> SELECTED GREASES <small>Step 5: Highlight a grease, click web links above, use Grease name in CSEST search</small> <input type="checkbox"/> Selected Greases					
<input type="checkbox"/> Which category of application? <input type="checkbox"/> Chains <input type="checkbox"/> Wire rope <input type="checkbox"/> Belts/ducks <input type="checkbox"/> Slides, guides, or ways <input type="checkbox"/> Gears <input type="checkbox"/> Casing and Tubing pipe fittings <input type="checkbox"/> Flexible Couplings		<input type="checkbox"/> Moly required? <input type="checkbox"/> 5% <input type="checkbox"/> 3% <input type="checkbox"/> Less than 3% <input type="checkbox"/> No		<input type="checkbox"/> Heavy loads requiring EP? <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Food machinery/application? <small>NSF H1: incidental food contact NSF H2: Non food contact</small>					
<input type="checkbox"/> Which kind of bearing? <input type="checkbox"/> Ball/roller, or needle <input type="checkbox"/> Plain (journal) bearing		<input type="checkbox"/> Approx. bearing diameter? <small>Greater than 6 inches 3 to 6 inches Less than 3 inches</small>		<input type="checkbox"/> Which bearing type? <input type="checkbox"/> Spherical roller bearing <small>Conveyor belt or roll bearing Needle bearing Roller bearing Ball bearing</small>		<input type="checkbox"/> Ball/roller required rpm <small>Greater than 3000 RPM 2000 to 5000 RPM 500 to 2000 RPM Less than 500 RPM</small>					
<input type="checkbox"/> File Help <input type="checkbox"/> Step 1: APPLICATION <input type="checkbox"/> Step 2: CONDITIONS <input type="checkbox"/> Scrollbar to view all conditions		<input type="checkbox"/> Step 3: Importance <small>move cursor on scale of 1-10</small>		<input type="checkbox"/> Step 4: Printable Report <input type="checkbox"/> Go		<input type="checkbox"/> Enter Optional Customer Name for report <input type="checkbox"/> Search the Web <input type="checkbox"/> Chevron Texaco Data Sheets <input type="checkbox"/> SELECTED GREASES <small>Step 5: Highlight a grease, click web links above, use Grease name in CSEST search</small> <input type="checkbox"/> Selected Greases					
<table border="1"> <thead> <tr> <th colspan="2">Step 5: Highlight a grease, click web links above, use Grease name in CSEST search</th> </tr> </thead> <tbody> <tr> <td colspan="2"> <input type="checkbox"/> Rykote Grease EP <input type="checkbox"/> Super Permalube Grease <input type="checkbox"/> RPM Arctic Grease <input type="checkbox"/> SRI Grease NLGI2 <input type="checkbox"/> SRI Grease OEM <input type="checkbox"/> Utili-Plex Synthetic Grease EP <input type="checkbox"/> Moly Grease EP NLGI 1 <input type="checkbox"/> Moly Grease EP NLGI 2 <input type="checkbox"/> Dura-Lith Grease EP NLGI 0 <input type="checkbox"/> Dura-Lith Grease EP NLGI 1 <input type="checkbox"/> Dala Grease EP NLGI 0 <input type="checkbox"/> Dala Grease EP NLGI 0 <input type="checkbox"/> Dala Grease EP NLGI 1 <input type="checkbox"/> Utili-Plex Grease EP NLGI 0 <input type="checkbox"/> Utili-Plex Grease EP NLGI 1 <input type="checkbox"/> Ultra-Duty Grease EP NLGI 1 <input type="checkbox"/> RPM Heavy Duty LC Grease EP NL <input type="checkbox"/> Moly MAX Grease EP NLGI 1 <input type="checkbox"/> Black Pearl EP Grease EP NLGI 0 <input type="checkbox"/> Black Pearl Grease EP NLGI 1 <input type="checkbox"/> Full Greases EP NLGI 0 <input type="checkbox"/> FM Greases EP NLGI 1 <input type="checkbox"/> Rykon Premium Grease EP </td> </tr> </tbody> </table>								Step 5: Highlight a grease, click web links above, use Grease name in CSEST search		<input type="checkbox"/> Rykote Grease EP <input type="checkbox"/> Super Permalube Grease <input type="checkbox"/> RPM Arctic Grease <input type="checkbox"/> SRI Grease NLGI2 <input type="checkbox"/> SRI Grease OEM <input type="checkbox"/> Utili-Plex Synthetic Grease EP <input type="checkbox"/> Moly Grease EP NLGI 1 <input type="checkbox"/> Moly Grease EP NLGI 2 <input type="checkbox"/> Dura-Lith Grease EP NLGI 0 <input type="checkbox"/> Dura-Lith Grease EP NLGI 1 <input type="checkbox"/> Dala Grease EP NLGI 0 <input type="checkbox"/> Dala Grease EP NLGI 0 <input type="checkbox"/> Dala Grease EP NLGI 1 <input type="checkbox"/> Utili-Plex Grease EP NLGI 0 <input type="checkbox"/> Utili-Plex Grease EP NLGI 1 <input type="checkbox"/> Ultra-Duty Grease EP NLGI 1 <input type="checkbox"/> RPM Heavy Duty LC Grease EP NL <input type="checkbox"/> Moly MAX Grease EP NLGI 1 <input type="checkbox"/> Black Pearl EP Grease EP NLGI 0 <input type="checkbox"/> Black Pearl Grease EP NLGI 1 <input type="checkbox"/> Full Greases EP NLGI 0 <input type="checkbox"/> FM Greases EP NLGI 1 <input type="checkbox"/> Rykon Premium Grease EP	
Step 5: Highlight a grease, click web links above, use Grease name in CSEST search											
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FIGURE

APPLN. FILING DATE: March 12, 2004
TITLE: Product Selection Expert System
INVENTOR(S): ADRIAN D'SOUZA ET AL.
APPLICATION SERIAL NO: T-6346

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Step 1: APPLICATION

Step 2: CONDITIONS

Scollbar to view all conditions

Step 3: Importance

Move cursor on a scale of 1-10

Good Chassis Grease?

Step 4: Printable Report

GO

Enter Optional CustomerName for report

Select Application Method

- Spray Gun
- Manual
- Single Point auto-lubricator
- Central Lubrication System**
- Grease gun
- Aerosol spray
- Other, like container pumps

Which category of application?

- Mobile Farm Machinery
- Railroad
- Industrial, Marine, or food**
- Heavy duty on-highway in
- Passenger Car/Light Truck
- General Purpose
- Heavy Duty Off-Road

Which kind of bearing?

- Ball, roller, or needle
- Plan (journal) bearing

Which bearing type?

- Spherical roller bearing**
- Conveyor belt or roll bearing
- Needle bearing
- Roller bearing
- Ball bearing

Approx. bearing diameter?

- Greater than 6 inches
- 3 to 6 inches
- Less than 3 inches

Ball, roller, needle rpm?

- Greater than 5000 RPM
- 2000 to 5000 RPM
- 500 to 2000 RPM
- Less than 500 RPM

Search the Web

Chevron Texaco Data Sheets

SELECTED GREASES

Step 5: Highlight grease, click web links above, use Grease name in CBEST search

Selected Greases

- 0 Moly Grease EP NLGI 1
- 0 Moly Grease EP NLGI 2
- 0 RPM Heavy Duty LC Grease EP NL
- 0 Moly MAX Grease EP NLGI 1

Water washout resistance?

Continuous heavy loads?

Shock load protection?

Low Noise- OEM El motor bgs

Food machinery application?

- NSF H1: incidental food contact
- NSF H2: Non food contact

FIGURE

APPLN. FILING DATE: March 12, 2004
 TITLE: Product Selection Expert System
 INVENTOR(S): ADRIAN D'SOUZA ET AL.
 APPLICATION SERIAL NO: T-6346

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FIGURE

FIGURE 20

User full page showing all customer choices on single screen, resettable at any stage, with final scoring system for multiple products that varies – products listed in scoring table are based on user choices for application and conditions, relative scores of these products in the final table dependent on ratings ie importance to the end user

File Help

Step 1: APPLICATION

Step 2: CONDITIONS

Step 3: RATING

Step 4: PRINTABLE REPORT

APPLN. FILING DATE: March 12, 2004
 TITLE: Product Selection Expert System
 INVENTOR(S): ADRIAN D'SOUZA ET AL.
 APPLICATION SERIAL NO: T-6346

150

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146

Fig. 21

Step 1: APPLICATION	Step 2: CONDITIONS	Step 3: RATING	Step 4: PRINTABLE REPORT
Select Application Nuclear Power Plant Railroad Industrial, Marine, or Off-Highway Passenger Car, Light Truck Mobile Farm Machinery Heavy-duty Truck or Off-Highway General Purpose	Select Low Temp operating 1 to 40F -40 to -21F Below -40F	move cursor on scale of 1-10 Good Chassis Grease Industrial water resistance?	John Doe Product end user Search the Web Chevron Texaco Data Sheets SELECTED GREASES
Which kind of application? Drama Wire rope Sides, guides, or ways Bearings Gears Flexible Couplings Screws Kits	Select Application Method Spray Gun Brush Point auto lubricator Central System Grease gun Aerosol spray	Water washout resistance? Select the high temp operating above 350F 301 to 350F 213 to 260F 175 to 212F	Step 5: Highlight grease, click on web links above 150
Which kind of bearing? Ball bearing or needle Plain (journal) bearing	Continuous heavy load? Select Application Method Spray Gun Brush Point auto lubricator Central System Grease gun Aerosol spray	Shock load protection? Grease noise in bearings?	Selected Greases
Which kind of bearing type? Ball bearing Spherical roller bearing Conveyor belt or roll bearing Needle bearing Roller bearing	152 Rykotac Grease EP 141 Super Premium Grease 173 RPM Arctic Grease 190 SRI Grease NLGI2 180 SRI Grease OEM 175 UltiPlex Synthetic Grease EP 157 UltiPlex Grease EP NLGI 0 173 UltiPlex Grease EP NLGI 1 163 Black Pearl Grease EP NLGI 1 102 FM Greases EP NLGI 0 126 FM Greases EP NLGI 1 129 Rykotac Premium Grease EP	Food application NSF H1 Certification: Incident NSF H2 Certification: Non food	154
3% less than 34 No	Heavy loads requiring EP?	Yes No	146